SA ISSN 0038-223X

Supplement to the Journal of the South African Institute of Mining and Metallurgy, March 1982

INDEX

TO THE

JOURNAL OF THE SOUTH AFRICAN INSTITUTE OF MINING AND METALLURGY

VOLUME 81
JANUARY — DECEMBER
1981

PUBLISHED BY THE INSTITUTE, KELVIN HOUSE, 2 HOLLARD STREET, JOHANNESBURG
and printed by Northern Cape Printers, Kimberley

THE SOUTH AFRICAN INSTITUTE OF MINING AND METALLURGY

OFFICE BEARERS AND COUNCIL FOR THE 1980-1981 SESSION

Honorary President
R. S. Lawrence
President, Chamber of Mines of S.A.

Honorary Vice-Presidents
The Honourable F. W. de Klerk
Minister of Minerals and Energy Affairs

The Honourable W. A. Cruywagen
Administrator, Transvaal Province

The Honourable Dr V. V. van der Merwe
Administrator, Orange Free State Province

J. G. Kircher, Government Mining Engineer

President
Dr P. R. Jochens

Immediate Past President
D. A. Viljoen

Vice Presidents
G. Y. Nisbet
Prof. A. N. Brown

Honorary Treasurer
Dr D. G. Krige

Ordinary Members of Council

B. C. Alberts	Dr B. K. Loveday
J. D. Austin	C. S. Macphail
P. T. Fewell	D. G. Malan
C. E. Fivaz	J. C. Mostert
P. N. Harris	G. C. Thompson
H. E. James	R. A. von Maltitz
Prof. R. P. King	Dr H. Wagner
Prof. F. Q. P. Leiding	

Branch Chairmen
R. B. Smith, Witbank-Middelburg Branch
H. G. Mosenthal, O.F.S.-Klerksdorp Branch

Past Presidents serving on Council

Dr M. G. Atmore	Prof. R. P. Plewman
H. Britten	Dr R. E. Robinson
Prof. D. D. Howat	Dr M. D. G. Salamon
Dr J. P. Hugo	P. W. J. van Rensburg
D. G. Maxwell	P. A. von Wielligh

Corresponding members of Council
United Kingdom: R. H. McWilliam, C. T. Shaw
Australasia: G. A. Mackay
Canada: Prof. B. W. MacKenzie
U.S.A.: Dr H. M. Wells, Dr J. M. Rendu
Zimbabwe: Prof. K. T. Viewing

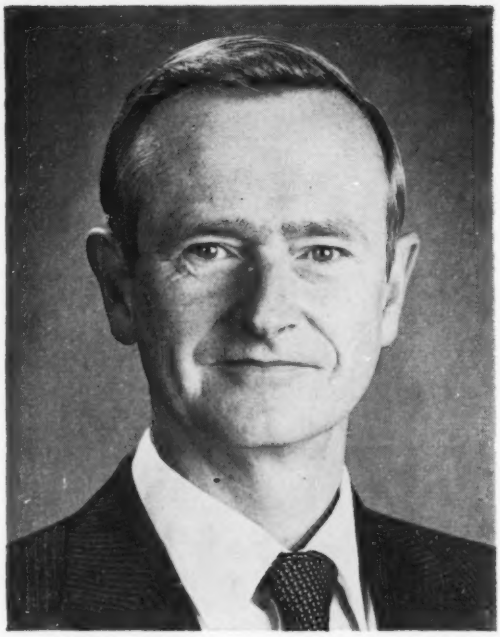
Federation of Societies of Professional Engineers
Representatives: D. A. Viljoen, A. N. Brown
Alternates: H. E. James, J. D. Austin
Council of Mining and Metallurgical Institutions
G. J. Mortimer

The Associated Scientific and Technical Societies of South Africa — Controlling Executive
Representatives: D. A. Viljoen, Dr P. R. Jochens
Alternates: G. Y. Nisbet, A. N. Brown

Honorary Legal Advisers
Messrs Van Hulsteyn, Duthie & Saner

Auditors
Messrs Alex. Aiken & Carter

THE PRESIDENT 1980-1981
DR P. R. JOCHENS



PAST PRESIDENTS

*W. Bettel (1894-1895)
*A. F. Crosse (1895-1896)
*W. R. Feldtmann (1896-1897)
*C. Butters (1897-1898)
*J. Loevy (1898-1899)
*J. R. Williams (1899-1903)
*S. H. Pearce (1903-1904)
*W. A. Caldecott (1904-1905)
*W. Cullen (1905-1906)
*E. H. Johnson (1906-1907)
*J. Yates (1907-1908)
*R. G. Bevington (1908-1909)
*A. McA. Johnston (1909-1910)
*J. Moir (1910-1911)
*C. B. Saner (1911-1912)
*W. R. Dowling (1912-1913)
*A. Richardson (1913-1914)
*G. H. Stanley (1914-1915)
*J. E. Thomas (1915-1916)
*J. A. Wilkinson (1916-1917)
*G. Hildick-Smith (1917-1918)
*H. S. Meyer (1918-1919)
*J. Gray (1919-1920)
*J. Chilton (1920-1921)
*F. Wartenweiler (1921-1922)
*G. A. Watermeyer (1922-1923)
*F. W. Watson (1923-1924)
*C. J. Gray (1924-1925)
*H. A. White (1925-1926)
*H. R. Adam (1926-1927)
*Sir R. N. Kotze (1927-1928)
*J. A. Woodburn (1928-1929)
*H. Pirow (1929-1930)
*J. Henderson (1930-1931)
*A. King (1931-1932)
*V. Nimmo-Dewar (1932-1933)
*P. N. Lategan (1933-1934)
*E. C. Ranson (1934-1935)
*R. A. Flugge-De-Smidt (1935-1936)
*T. K. Prentice (1936-1937)
*R. S. G. Stokes (1937-1938)
*P. E. Hall (1938-1939)
*E. H. A. Joseph (1939-1940)
*J. H. Dobson (1940-1941)
*Theo Meyer (1941-1942)
*John V. Muller (1942-1943)
*C. Biccard Jeppe (1943-1944)
*P. J. Louis Bok (1944-1945)
*J. T. McIntyre (1945-1946)
*M. Falcon (1946-1947)
*A. Clemes (1947-1948)
F. G. Hill (1948-1949)
*O. A. E. Jackson (1949-1950)
*W. E. Gooday (1950-1951)
C. J. Irving (1951-1952)
*D. D. Stitt (1952-1953)
M. C. G. Meyer (1953-1954)
L. A. Bushell (1954-1955)
H. Britten (1955-1956)
Wm. Bleloch (1956-1957)
*H. Simon (1957-1958)
*M. Barcza (1958-1959)
R. J. Adamson (1959-1960)
*W. S. Findlay (1960-1961)
D. G. Maxwell (1961-1962)
J. de V. Lambrechts (1962-1963)
J. F. Reid (1963-1964)
D. M. Jamieson (1964-1965)
H. E. Cross (1965-1966)
*D. Gordon Jones (1966-1967)
P. Lambooy (1967-1968)
R. C. J. Goode (1968-1969)
J. K. E. Douglas (1969-1970)
V. C. Robinson (1970-1971)
D. D. Howat (1971-1972)
J. P. Hugo (1972-1973)
P. W. J. van Rensburg (1973-1974)
R. P. Plewman (1974-1975)
R. E. Robinson (1975-1976)
M. D. G. Salamon (1976-1977)
P. A. von Wielligh (1977-1978)
M. G. Atmore (1978-1979)
D. A. Viljoen (1979-1980)

*Deceased

Secretaries
Associated Scientific and Technical Societies of South Africa
Kelvin House, 2 Hollard Street, Johannesburg.
Telegraphic Address: Perspicax
P.O. Box 61019 Telephone 834-1271
Marshalltown, Tvl.
2107

Editor: Dr H. W. Glen

This Journal is published with financial assistance from the Department of National Education.

CONTENTS OF VOLUME 81, 1981

		Page
Journal No.	1—January	1
	2—February	41
	3—March	57
	4—April	93
	5—May	117
	6—June	145
	7—July	205
	8—August	233
	9—September	257
	10—October	289
	11—November	309
	12—December	329

PAPERS AND NOTES READ BEFORE THE INSTITUTE

The flow of slurry from a breached tailings dam, by G. E. Blight, M. J. Robinson, and J. A. C. Diering 1
Tests on the cutting performance of a continuous miner, by F. F. Roxborough, P. King, and E. J. Pedroncelli 9
The non-oxidative dissolution of nickel concentrate in aqueous acidic solutions, by A. O. Filmer and P. E. L. Balestra 26
Spotlight on project management in the metallurgical industry, by J. D. Koch 33
The flotation of gold, uranium, and pyrite from Witwatersrand ores, by P. J. D. Lloyd 41
Kwaliteitsbeheer in die metallurgiese bedryf, deur W. J. Kotze 48
Discounting in the presence of inflation — the engineer giving evidence in a court of law, by O. L. Papendorf 49
Spotlight on the Council of Mining and Metallurgical Institutions and the 1982 Congress, by D. A. Viljoen 51
The 1980 Coal Processing School, by Z. Zitron 54
Automation trends in room-and-pillar continuous-mining systems in the U.S.A., by Y. P. Chugh and H. E. Parkinson .. 57
The Relix process for the resin-in-pulp recovery of uranium, by F. L. D. Cloete 66
The non-oxidative dissolution of nickel mattes in aqueous acidic solutions, by A. O. Filmer 74
Spotlight on the commissioning of metallurgical plant, by P. Lloyd and K. Levin 85
The influence of resin functional group on the ion-exchange recovery of uranium, by F. X. McGarvey and J. Ungar 93
Plant practice in the flotation of phosphate, by J. H. Fourie 101
The other side of the fence, by W. Spencer 109
A tribute to John Keith Elers Douglas 112
Spotlight on increased underground extraction of coal, by G. C. Thompson 114
Gold-mine productivity as affected by the average wet-bulb temperature of the underground working places, by D. G. Krige and C. P. S. Barnard 117
The early detection of fires and spontaneous heatings in South African collieries, by C. J. Fauconnier 122
Research into fire fighting and fire prevention in South Africa, by A. Whillier and J. D. Greig 131
Spotlight on Infacon 80, by C. W. P. Finn 136
The stability of the strata overlying the mined-out areas of the central Witwatersrand, by F. G. Hill 145
Project management in the Coal Division of Gencor, by G. C. Thompson 192
Spotlight on wear and abrasion in industry, by D. D. Howat 200
The general requirements for efficient project management, by J. D. Koch. 205
A model of capital expenditure for gold-mine planning, by J. A. L. Napier 212
Investment criteria and choice of production rate in the planning of gold-mine production, by J. A. L. Napier 221
Optimum versus maximum recovery of gold, by P.R. Jochens 229
A novel method for the underground disinfection of mine water by *in situ* chlorine generation, by D. D. Marsden and L. E. Kun 233
Heat transfer and limiting physiological criteria as a basis for the setting of heat stress limits, by J. M. Stewart 239
Project management in the metallurgical industry, by P. R. Jochens 252
The role of mining in South Africa: Presidential Address, by G. Y. Nisbet 273
The evaluation, design, and construction of the uranium plant for Chemwes Limited, by E. B. Viljoen, J. L. Taylor, J. E. Robinson, B. J. Bluhm, P. Le Grange, and W. Pilkington 280
The selection of abrasion–corrosion–resistant materials for gold-mining equipment, by C. Allen, B. E. Protheroe, and A. Ball .. 289
SX 3CR12 – a material for abrasion–corrosion control, by C. R. Thomas 298
Problems in the hydrometallurgical extraction of uranium in the U.S.A. and South Africa, by J. P. McDonald, P. L. Mattison, and J. M. W. MacKenzie 303
The reworking of old mines – a rock mechanics challenge, by R. C. More O'Ferrall 309
The reclamation of gold from worked-out mines by the Boshoff method, by G. J. Krige 315
Micro-seismic events: an aid in studies of deep-mine rock structure, by T. O. Hagan 319
Spotlight on geostatistics – Professor D. G. Krige, by A. N. Brown 321
In die kollig: hittebehandeling: teorie en praktyk, deur R. Dippenaar 323
The calculation of time required to mix liquid metal in a ladle by gas rinsing, by L. W. Helle 329
A review of the State's role in assisting gold mines in South Africa, by C. A. Border 338
A note on rapid determinations of present values in the presence of growth and inflation, by O. L. Papendorf 345
The influence of a fluctuating gold price on the potential of mining low-grade areas, by A. N. Brown 348
Spotlight on the Council for Mineral Technology (Mintek), by H. W. Glen 352

AUTHOR AND SUBJECT INDEX

Page

A

ABRASION
The selection of abrasion–corrosion–resistant materials for gold-mining equipment, by C. Allen, B. E. Protheroe, and A. Ball 289
Spotlight on wear and abrasion in industry, by D. D. Howat 200
SX 3CR12 - a material for abrasion–corrosion control, by C. R. Thomas 298
Allen, C.
jt. author: *The selection of abrasion–corrosion–resistant materials for gold-mining equipment*, by C. Allen, B. E. Protheroe, and A. Ball 289
ANNUAL General Meeting **see** Proceedings at General Meetings
AUTOMATION
Automation trends in room-and-pillar continuous-mining systems in the U.S.A., by Y. P. Chugh and H. E. Parkinson 57
AWARDS
Award for C. M. I. fuelling technique: 1981 National Productivity Institute annual award 351
Brigadier Stokes Memorial Award to Dr William Bleloch 257
Chamber of Mines award for bravery to Mr Petrus Pelser and Mr Edwin Goosen 353
Institute's Silver Medal to Messrs P. King and E. J. Pedroncelli 258
Institute's Silver Medal to Mr R. Heunis 259
Certificate of Merit to Prof. F. F. Roxborough .. 268
Student prizes to F. C. Kruger, N. A. Alexander, W. Barret, and J. R. Fraser 268

B

BAFOKENG mine
The flow of slurry from a breached tailings dam, by G. E. Blight, M. J. Robinson, and J. A. C. Diering 1
Balestra, P. E. L.
jt. author: *The non-oxidative dissolution of nickel concentrate in aqueous acidic solutions*, by A. O. Filmer and P. E. L. Balestra 26
Ball, A.
jt. author: *The selection of abrasion–corrosion–resistant materials for gold-mining equipment*, by C. Allen, B. E. Protheroe, and A. Ball 289
Barnard, C. P. S.
jt. author: *Gold-mine productivity as affected by the average wet-bulb temperature of the underground working places*, by D. G. Krige and C. P. S. Barnard 117
Blight, G. E.
jt. author: *The flow of slurry from a breached tailings dam*, by G. E. Blight, M. J. Robinson, and J. A. C. Diering 1
Bluhm, B. J.
jt. author: *The evaluation, design, and construction of the uranium plant for Chemwes Limited*, by E. B. Viljoen, J. L. Taylor, J. E. Robinson, B. J. Bluhm, P. Le Grange, and W. Pilkington 280
Border, C. A.
author: *A review of the State's role in assisting gold mines in South Africa* 338
Disc. p. 344.
BOSHOFF Group
The reclamation of gold from worked-out mines by the Boshoff method, by G. J. Krige 315
Brown, A. N.
author: *The influence of a fluctuating gold price on the potential of mining low-grade areas* 348
Spotlight on geostatistics – Professor D. G. Krige 321
CAPITAL investments
Investment criteria and choice of production rate in the planning of gold-mine production, by J. A. L. Napier 221
A model of capital expenditure for gold-mine planning, by J. A. L. Napier 212

Page

C

CASTINGS
The other side of the fence, by W. Spencer 109
CHEMWES Limited
The evaluation, design, and construction of the uranium plant for Chemwes Limited, by E. B. Viljoen, J. L. Taylor, J. E. Robinson, B. J. Bluhm, P. Le Grange, and W. Pilkington 280
Chugh, Y. P.
jt. author: *Automation trends in room-and-pillar continuous-mining systems in the U.S.A.* by Y. P. Chugh and H. E. Parkinson 57
Cloete, F. L. D.
author: *The Relix process for the resin-in-pulp recovery of uranium* 66
COAL
The 1980 Coal Processing School, by Z. Zitron 54
Spotlight on increased underground extraction of coal, by G. C. Thompson 114
COAL mines and mining
Automation trends in room-and-pillar continuous-mining systems in the U.S.A., by Y. P. Chugh and H. E. Parkinson 57
The early detection of fires and spontaneous heatings in South African collieries, by C. J. Fauconnier 122
Tests on the cutting performance of a continuous miner, by F. F. Roxborough, P. King, and E. J. Pedroncelli 9
COLLOQUIA
Kwaliteitsbeheer in die metallurgiese bedryf, deur W. J. Kotze 48
Optimum versus maximum recovery of gold, by P. R. Jochens (opening address at the colloquium held on 5th Jun., 1981) 229
Project management in the metallurgical industry, by P. R. Jochens (opening address at the colloquium held on 16th Sep., 1980) 252
Spotlight on project management in the metallurgical industry, by J. D. Koch 33
Spotlight on wear and abrasion in industry, by D. D. Howat 200
CORROSION-resisting materials
The selection of abrasion–corrosion–resistant materials for gold-mining equipment, by C. Allen, B. E. Protheroe, and A. Ball 289
SX 3CR12 – a material for abrasion–corrosion control, by C. R. Thomas 298
COUNCIL for Mineral Technology
Spotlight on the Council for Mineral Technology (Mintek), by H. W. Glen 352
COUNCIL of Mining and Metallurgical Institutions
Spotlight on the Council of Mining and Metallurgical Institutions and the 1982 Congress, by D. A. Viljoen 51

D

DETECTORS
The early detection of fires and spontaneous heatings in South African collieries, by C. J. Fauconnier 122
Diering, J. A. C.
jt. author: *The flow slurry from a breached tailings dam*, by G. E. Blight, M. J. Robinson, and J. A. C. Diering 1
Dippenaar, R.
author: *In die kollig: hittebehandeling: teorie en praktyk* 323
DISCOUNT cash flows
Discounting in the presence of inflation – the engineer giving evidence in a court of law, by O. L. Papendorf 49
DISSOLUTION **see** Solution (chemistry)
Douglas, J. K. E.
A tribute to John Keith Elers Douglas 112

F

Page

Fauconnier, C. J.
author: *The early detection of fires and spontaneous heatings in South African collieries* 122
FERRO-ALLOYS
Spotlight on Infacon 80, by C. W. P. Finn 136
Filmer, A. O.
jt. author: *The non-oxidative dissolution of nickel concentrate in aqueous acidic solutions*, by A. O. Filmer and P. E. L. Balestra 26
author: *The non-oxidative dissolution of nickel mattes in aqueous acidic solutions* 74
Finn, C. W. P.
Spotlight on Infacon 80 136
FIRE detectors **see** Detectors
FIRES
The early detection of fires and spontaneous heatings in South African collieries, by C. J. Fauconnier 122
Research into fire fighting and fire prevention in South Africa, by A. Whillier and J. D. Greig .. 131
FLOTATION
The flotation of gold, uranium, and pyrite from Witwatersrand ores, by P. J. D. Lloyd 41
Plant practice in the flotation of phosphate, by J. H. Fourie 101
FOSKOR **see** Phosphate Development Corporation
FOUNDRIES
The other side of the fence, by W. Spencer 109
Fourie, J. H.
author: *Plant practice in the flotation of phosphate* .. 101

G

GENERAL Mining group
Project management in the Coal Division of Gencor, by G. C. Thompson 192
GEOSTATISTICS
Spotlight on geostatistics – Professor D. G. Krige, by A. N. Brown 321
Glen, H. W.
Spotlight on the Council for Mineral Technology (Mintek) 352
GOLD
The flotation of gold, uranium, and pyrite from Witwatersrand ores, by P. J. D. Lloyd 41
Optimum versus maximum recovery of gold, by P. R. Jochens (opening address at the colloquium held on 5th Jun., 1981) 229
GOLD mines and mining
Gold-mine productivity as affected by the average wet-bulb temperature of the underground working places, by D. G. Krige and C. P. S. Barnard .. 117
The influence of a fluctuating gold price on the potential of mining low-grade areas, by A. N. Brown .. 348
Investment criteria and choice of production rate in the planning of gold-mine production, by J. A. L. Napier 221
A model of capital expenditure for gold-mine planning, J. A. L. Napier 212
The reclamation of gold from worked-out mines by the Boshoff method, by G. J. Krige 315
A review of the State's role in assisting gold mines in South Africa, by C. A. Border 338
Disc. p. 344
The reworking of old mines – a rock mechanics challenge, by R. C. More O'Ferrall 309
Disc. p. 313
Greig, J. D.
jt. author: *Research into fire fighting and fire prevention in South Africa*, by A. Whillier and J. D. Greig 131

H

Hagan, T. O.
author: *Micro-seismic events: an aid in studies of deep-mine rock structures* 319
HEAT treatment
In die kollig: hittebehandeling: teorie en praktyk, deur R. Dippenaar 323
Helle, L. W.
author: *The calculation of the time required to mix liquid metal in a ladle by gas rinsing* 329
Hill, F. G.
author: *The stability of the strata overlying the mined-out areas of the central Witwatersrand* 145
Howat, D. D.
Spotlight on wear and abrasion in industry 200
HYDROMETALLURGY
Problems in the hydrometallurgical extraction of uranium in the U.S.A. and South Africa, by J. P. McDonald, P. L. Mattison, and J. M. W. MacKenzie 303

I

INFACON
Spotlight on Infacon 80, by C. W. P. Finn 136
INFLATION (finance)
Discounting in the presence of inflation – the engineer giving evidence in a court of law, by O. L. Papendorf 49
A note on rapid determinations of present values in the presence of growth and inflation, by O. L. Papendorf 345
ION exchange
The influence of resin functional group on the ion-exchange recovery of uranium, by F. X. McGarvey and J. Ungar 93
The Relix process for the resin-in-pulp recovery of uranium, by F. L. D. Cloete 66

J

JOCHENS, P.R.
author: *Optimum versus maximum recovery of gold (opening address at the colloquium held on 5th Jun.*, 1981) 229
author: *Project management in the metallurgical industry (opening address at the colloquium held on 16th Sep.*, 1980) 252

K

King, P.
jt. author: *Tests on the cutting performance of a continuous miner*, by F. F. Roxborough, P. King, and E. J. Pedroncelli 9
Koch, J. D.
author: *The general requirements for efficient project management* 205
Spotlight on project management in the metallurgical industry 33
Kotze, W. J.
Kwaliteitsbeheer in die metallurgiese bedryf 48
Krige, D. G.
jt. author: *Gold-mine productivity as affected by the average wet-bulb temperature of the underground working places*, by D. G. Krige and C. P. S. Barnard 117
disc.: A review of the State's role in assisting gold mines in South Africa, by C. A. Border 344
Spotlight on geostatistics – Professor D. G. Krige, by A. N. Brown 321
Krige, G. J.
author: *The reclamation of gold from worked-out mines by the Boshoff method* 315
Kun, L. E.
jt. author: *A novel method for the underground disinfection of mine water by* **in situ** *chlorine generation*, by D. D. Marsden and L. E. Kun 233

L

LABOUR productivity
Gold mine productivity as affected by the average wet-bulb temperature of the underground working places, by D. G. Krige and C. P. S. Barnard .. 117
Le Grange, P.
jt. author: *The evaluation, design, and construction of the uranium plant for Chemwes Limited*, by E. B. Viljoen, J. L. Taylor, J. E. Robinson, B. J. Bluhm, P. Le Grange, and W. Pilkington 280
Levin, K.
Spotlight on the commissioning of metallurgical plant, by P. Lloyd and K. Levin 85
Lloyd, P.
Spotlight on the commissioning of metallurgical plant by P. Lloyd and K. Levin 85
Lloyd, P. J. D.
author: *The flotation of gold, uranium, and pyrite from Witwatersrand ores* 41

Page

M

McDonald, J. P.
jt. author: *Problems in the hydrometallurgical extraction of uranium in the U.S.A. and South Africa*, by J. P. McDonald, P. L. Mattison, and J. M. W. MacKenzie .. 303
McGarvey, F. X.
jt. author: *The influence of resin functional group on the ion-exchange recovery of uranium* , by F. X. McGarvey and J. Ungar .. 93
MacKenzie, J. M. W.
jt. author: *Problems in the hydrometallurgical extraction of uranium in the U.S.A. and South Africa*, by J. P. McDonald, P. L. Mattison, and J. M. W. MacKenzie .. 303
MARGINAL mining
The influence of a fluctuating gold price on the potential of mining low-grade areas, by A. N. Brown .. 348
The reclamation of gold from worked-out mines by the Boshoff method, by G. J. Krige .. 315
A review of the State's role in assisting gold mines in South Africa, by C. A. Border .. 338
Disc. p. 344
The reworking of old mines – a rock mechanics challenge, by R. C. More O'Ferrall .. 309
Disc. p. 313
Marsden, D. D.
jt. author: *A novel method for the underground disinfection of mine water by* **in situ** *chlorine generation*, by D. D. Marsden and L. E. Kun .. 233
Marwaha, Prof. G. S.
Designated President-Elect of the Association of Indian Universities .. 8
MATHEMATICAL models
The calculation of the time required to mix liquid metal in a ladle by gas rinsing, by L. W. Helle .. 329
The flow of slurry from a breached tailings dam, by G. E. Blight, M. J. Robinson, and J. A. C. Diering 1
Investment criteria and choice of production rate in the planning of gold-mine production, by J. A. L. Napier .. 221
A model of capital expenditure for gold-mine planning, by J. A. L. Napier .. 212
Mattison, P. L.
jt. author: *Problems in the hydrometallurgical extraction of uranium in the U.S.A. and South Africa*, by J. P. McDonald, P. L. Mattison, and J. M. W. MacKenzie .. 303
METALLURGICAL plants
Plant practice in the flotation of phosphate, by J. H. Fourie .. 101
Spotlight on the commissioning of metallurgical plant, by P. Lloyd and K. Levin .. 85
MINE water
A novel method for the underground disinfection of mine water by *in situ* chlorine generation, by D. D. Marsden and L. E. Kun .. 233
MINERAL research
Spotlight on the Council for Mineral Technology (Mintek), by H. W. Glen .. 352
MINING industry
The role of mining in South Africa: Presidential Address by G. Y. Nisbet .. 273
MINTEK
Spotlight on the Council for Mineral Technology (Mintek), by H. W. Glen .. 352
More O'Ferral, R. C. **see** O'Ferrall, R. C. More

N

Napier, J. A. L.
author: *Investment criteria and choice of production rate in the planning of gold-mine production* .. 221
author: *A model of capital expenditure for gold-mine planning* .. 212
NICKEL
The non-oxidative dissolution of nickel concentrate in aqueous acidic solutions, by A. O. Filmer and P. E. L. Balestra .. 26
The non-oxidative dissolution of nickel mattes in aqueous acidic solutions, by A. O. Filmer .. 74
Nisbet, G. Y.
Presidential Address: *The role of mining in South Africa* .. 273

Page

O

OBITUARIES
Austin Whillier .. 253
W. S. Findlay .. 202
O'Ferrall, R. C. More
author: *The reworking of old mines – a rock mechanics challenge* .. 309
Disc. p. 313
Ortlepp, W. D.
disc.: The reworking of old mines – a rock mechanics challenge, by R. C. More O'Ferrall .. 313

P

Papendorf, O. L.
author: *Discounting in the presence of inflation – the engineer giving evidence in a court of law* .. 49
author: *A note on rapid determinations of present values in the presence of growth and inflation* .. 345
Parkinson, H. E.
jt. author: *Automation trends in room-and-pillar continuous-mining systems in the U.S.A.*, by Y. P. Chugh and H. E. Parkinson .. 57
Pedroncelli, E. J.
jt. author: *Tests on the cutting performance of a continuous miner*, by F. F. Roxborough, P. King, and E. J. Pedroncelli .. 9
PHOSPHATE Development Corporation
Plant practice in the flotation of phosphate, by J. H. Fourie .. 101
PHOSPHATES
Plant practice in the flotation of phosphate, by J. H. Fourie .. 101
Pilkington, W.
jt. author: *The evaluation, design, and construction of the uranium plant for Chemwes Limited*, by E. B. Viljoen, J. L. Taylor, J. E. Robinson, B. J. Bluhm, P. Le Grange, and W. Pilkington .. 280
PLANT design
The evaluation, design, and construction of the uranium plant for Chemwes Limited, by E. B. Viljoen, J. L. Taylor, J. E. Robinson, B. J. Bluhm, P. Le Grange, and W. Pilkington .. 280
PRESIDENTIAL Address
Nisbet, G. Y.: The role of mining in South Africa .. 273
PROCEEDINGS at General Meetings
Annual General Meeting, 19th Aug., 1981 .. 257
PRODUCTIVITY **see** Labour productivity
PROJECT management
The general requirements for efficient project management, by J. D. Koch .. 205
Project management in the Coal Division of Gencor, by G. C. Thompson .. 192
Project management in the metallurgical industry, by P. R. Jochens (opening address at the colloquium held on 16th Sep., 1980) .. 252
Spotlight on project management in the metallurgical industry, by J. D. Koch .. 33
Spotlight on the commissioning of metallurgical plant, by P. Lloyd and K. Levin .. 85
Protheroe, B. E.
jt. author: *The selection of abrasion–corrosion–resistant materials for gold-mining equipment*, by C. Allen, B. E. Protheroe, and A. Ball .. 289
PYRITE
The flotation of gold, uranium, and pyrite from Witwatersrand ores, by P. J. D. Lloyd .. 41

Q

QUALITY control
Kwaliteitsbeheer in die metallurgiese bedryf, deur W. J. Kotze .. 48

R

RELIX process
The Relix process for the resin-in-pulp recovery of uranium, by F. L. D. Cloete .. 66

Page

RESINS
The influence of resin functional group on the ion-exchange recovery of uranium, by F. X. McGarvey and J. Ungar 93
Robinson, J. E.
jt. author: *The evaluation, design, and construction of the uranium plant for Chemwes Limited*, by E. B. Viljoen, J. L. Taylor, J. E. Robinson, B. J. Bluhm, P. Le Grange, and W. Pilkington 280
Robinson, M. J.
jt. author: *The flow of slurry from a breached tailings dam*, by G. E. Blight, M. J. Robinson, and J. A. C. Diering 1
ROCK mechanics
Micro-seismic events: an aid in studies of deep-mine rock structures, by T. O. Hagan 319
The reworking of old mines – a rock mechanics challenge, by R. C. More O'Ferrall 309
Disc. p. 313
Roxborough, F. F.
jt. author: *Tests on the cutting performance of a continuous miner*, by F. F. Roxborough, P. King, and E. J. Pedroncelli 9

S

SEISMOMETRY
Micro-seismic events: an aid in studies of deep-mine rock structures, by T. O. Hagan 319
SLIMES dams
The flow of slurry from a breached tailings dam, by G. E. Blight, M. J. Robinson, and J. A. C. Diering. 1
SLURRIES
The flow of slurry from a breached tailings dam, by G. E. Blight, M. J. Robinson, and J. A. C. Diering . 1
SOLUTION (chemistry)
The non-oxidative dissolution of nickel concentrate in aqueous acidic solutions, by A. O. Filmer and P. E. L. Balestra 26
The non-oxidative dissolution of nickel mattes in aqueous acidic solutions, by A. O. Filmer 74
Spencer, W.
author: *The other side of the fence* 109
Spengler, M. G.
disc.: The reworking of old mines – a rock mechanics challenge, by R. C. More O'Ferrall 313
SPOTLIGHT series
Spotlight on geostatistics – Professor D. G. Krige, by A. N. Brown 321
Spotlight on increased underground extraction of coal, by G. C. Thompson 114
Spotlight on Infacon 80, by C. W. P. Finn 136
Spotlight on project management in the metallurgical industry, by J. D. Koch 33
Spotlight on the commissioning of metallurgical plant, by P. Lloyd and K. Levin 85
Spotlight on the Council for Mineral Technology (Mintek), by H. W. Glen 352
Spotlight on the Council of Mining and Metallurgical Institutions and the 1982 Congress, by D. A. Viljoen 51
Spotlight on wear and abrasion in industry, by D. D. Howat 200
STATISTICAL methods
Discounting in the presence of inflation – the engineer giving evidence in a court of law, by O. L. Papendorf 49
Heat transfer and limiting physiological criteria as a basis for the setting of heat stress limits, by J. M. Stewart 239
A note on rapid determinations of present values in the presence of growth and inflation, by O. L. Papendorf 345
STEEL
The calculation of the time required to mix liquid metal in a ladle by gas rinsing, by L. W. Helle .. 329
Stewart, J. M.
author: *Heat transfer and limiting physiological criteria as a basis for the setting of heat stress limits* .. 239
STRATA stability
The stability of the strata overlying the mined-out areas of the central Witwatersrand, by F. G. Hill .. 145

T

TAILINGS dams **see** Slimes dams
Taylor, J. M.
jt. author: *The evaluation, design, and construction of the uranium plant for Chemwes Limited*, by E. B. Viljoen, J. L. Taylor, J. E. Robinson, B. J. Bluhm, P. Le Grange, and W. Pilkington 280
TEMPERATURE
Gold-mine productivity as affected by the average wet-bulb temperature of the underground working places, by D. G. Krige and C. P. S. Barnard .. 117
TEMPERATURE – Physiological effect
Heat transfer and limiting physiological criteria as a basis for the setting of heat stress limits, by J. M. Stewart 239
Thomas, C. R.
author: *SX 3CR12 – a material for abrasion–corrosion control* 298
Thompson, G. C.
author: *Project management in the Coal Division of Gencor* 192
Spotlight on increased underground extraction of coal 114

U

Ungar, J.
jt. author: *The influence of resin functional group on the ion-exchange recovery of uranium*, by F. X. McGarvey and J. Ungar 93
URANIUM
The evaluation, design, and construction of the uranium plant for Chemwes Limited, by E. B. Viljoen, J. L. Taylor, J. E. Robinson, B. J. Bluhm, P. Le Grange, and W. Pilkington 280
The influence of resin functional group on the ion-exchange revovery of uranium, by F. X. McGarvey and J. Ungar 93
The flotation of gold, uranium, and pyrite from Witwatersrand ores, by P. J. D. Lloyd 41
Problems in the hydrometallurgical extraction of uranium in the U.S.A. and South Africa, by J. P. McDonald, P. L. Mattison, and J. M. W. MacKenzie 303
The Relix process for the resin-in-pulp recovery of uranium, by F. L. D. Cloete 66
UNDERMINED ground
The stability of the strata overlying the mined-out areas of the central Witwatersrand, by F. G. Hill .. 145

V

VALUE analysis
A note on rapid determinations of present values in the presence of growth and inflation, by O. L. Papendorf 345
Viljoen, D. A.
Spotlight on the Council of Mining and Metallurgical Institutions and the 1982 Congress 51
Viljoen, E. B.
jt. author: *The evaluation, design, and construction of the uranium plant for Chemwes Limited*, by E. B. Viljoen, J. L. Taylor, J. E. Robinson, B. J. Bluhm, P. Le Grange, and W. Pilkington 280
Von Wielligh, P. A.
Proposer of vote of thanks to G. Y. Nisbet for his Presidential Address 262

W

WESTERN Deep Levels
Micro-seismic events: an aid in studies of deep-mine rock structures, by T. O. Hagan 319
WATER purification
A novel method for the underground disinfection of mine water by *in situ* chlorine generation, by D. D. Marsden and L. E. Kun 233
Whillier, A.
jt. author: *Research into fire fighting and fire prevention in South Africa*, by A. Whillier and J. D. Greig 131

Z

Zitron, Z.
author: *The 1980 Coal Processing School* 54